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Master in Economic Development and Growth

Foreign Direct Investment and gender labour force participation: An empirical study on Sub-Saharan Africa between 1990-2009.

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Abstract: This paper assesses how Foreign Direct Investment (FDI) impacts female labour force participation in Sub Saharan Africa (SSA). To deepen our research we additionally consider whether FDI lead to a decrease in the gender gap in employment participation in the region. The motivation of this research is that SSA governments have been implementing policies to attract FDI in their economies while little is known on the effects FDI have on gender related labour market outcomes. This paper contributes to the general literature gap on the effects FDI has on gender dimensions of host economies. This analysis is performed by means of OLS regressions with fixed effects using data from 43 SSA countries over the 1990-2009 period. Regressions use first Female Labour Force participation and later the ratio of Female to Male labour force participation as the dependent variable. The latter evaluate impacts of FDI on gender employment participation gaps. We find that FDI flows that entered SSA over the last couple of decades did not generate significant improvements in FLFP, exception made for countries with initially low FLFP rates. When differentiating our countries according to mineral endowments we found a positive effect of FDI on FLFP that was only significant in mineral rich countries. Significant reductions in gender employment participation gaps weren't observed in any of our regressions.

Key words: Foreign Direct Investment; gender, labour market participation, Sub-Saharan Africa

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Section 1: Introduction

After decades of stagnation, Sub-Saharan Africa (SSA) is on the move. Since the early 2000s, the region is experiencing a real economic take off and turned into being the second fastest growing region in the world (Fine et al, 2012). In this last couple of decades, Foreign Direct Investment (FDI)¹ has also become the predominant source of financing in developing regions; this is particularly true for the Sub Saharan countries. With the ambition of boosting economic growth and to fill in deficits in national savings, many SSA states aimed at making FDI inflows increase by adopting attractive policies for foreign investors (Kamara, 2013). This is how FDI rose from around US\$ 4.5 billion in the mid-1990s to about US\$ 44.3 in 2008 in SSA (World Bank Data). The impacts FDI increases have on receiving economies have been quite extensively discussed for some economic outcomes such as growth and employment. Nevertheless, little attention has been devoted to the effects such investments have on gender issues, particularly when it comes to labour force participation². This thesis addresses the topic and aims at assessing how strong increases in inward flowing FDI influence female labour force participation (FLFP) in Sub-Saharan Africa. Concretely, by means of this analysis, we aim at answering the following research question:

“ How does Foreign Direct Investment impact female labour force participation in Sub-Saharan Africa?”

To extent the research a step further, we will evaluate whether FDI also impacted the gender labour participation gap in SSA. The following sub-question will be tackled in our empirical part:

“Does Foreign Direct Investment lead to a decrease in the employment participation gender gap in Sub-Saharan Africa? ”

Previous researches on the gender effects of FDI in employment have been performed in the form of small-scale studies, which prevented any generalization of the dynamics of this relation to be concluded at wider dimensions. Our thesis contributes to

¹ FDI is defined as an investment made by an enterprise residing in a home country with the ambition of obtaining a long-term “influence” in the administration of an affiliate enterprise in a host economy (OECD, 2008, p. 17). A complete definition is provided in section 2.1.

² Labour participation refers to the employment of an individual in any type of economic activity, this encompasses activities in the formal and in the informal sectors as well as self-employment. A complete definition is provided in section 2.1.

the current literature gap by providing more global conclusions on the gender effects of FDI in labour force participation in a region that has not yet been covered by previous works related to the topic. Sub Saharan Africa is chosen as our region of interest because we consider that the total set of economic and social effects FDI may have in host economies should be assessed before African governments eagerly continue to attract FDI into their countries. Considering the effects FDI has on gender specific employment participation is important for policymakers because gender inequalities in labour markets have strong repercussions on a country's economy. For example, Cuberes and Teignier (2012) estimated that losses in GDP per capita attributable to gender inequality in the labour market were as high as 27 percent in certain regions. Additionally, Aguirre et al (2012), assessed that increasing female labour force participation (FLFP) to male levels would generate country specific increases in GDP that could be as high as 34%³. Making women join the labour force and reducing the gender participation gap in employment should thus be a priority for SSA governments willing to get out of poverty and ensure the longevity of their current growth episode.

In this paper, we consider a panel data that covers forty-three SSA countries over the period 1990-2009. The considered countries are selected according to data availability. We resort to ordinary least square regressions with fixed effects to analyse the impacts of FDI on labour force participation. To answer our research- and our sub-question, we test the following hypotheses. First, we assess whether FDI has an impact on female labour force participation in Sub Saharan Africa. Secondly, we test whether FDI impacts gender equality in labour force participation in SSA countries by using the ratio of female to male labour force participation instead of the FLFP rate as our dependent variable. Thirdly, we evaluate if the effect of FDI on female labour force participation and on gender equality in employment participation is different in mineral rich versus mineral poor SSA countries. We add this last hypothesis to contribute to the ongoing debate in which authors' views on whether mineral resource extraction has a positive or a negative effect on FLFP diverge.

We find that FDI has a low but positive and significant influence on FLFP, suggesting that the job creating effect of FDI benefits African women. Nevertheless, when SSA countries are differentiated according to their mineral endowments, the positive effect of FDI on FLFP remains significant only for mineral rich countries. A

³ as estimated for Egypt

probable explanation is that mineral extraction activities supported by FDI create jobs for women that are indirectly rather than directly related to mineral extraction. When it comes to impacting the gender employment participation gap, the effect of FDI is found to be insignificant both in mineral rich and in mineral poor countries. This means that FLFP does not increase faster than male labour force participation as a consequence of FDI inflows. Foreign Direct investments played thus no significant role in reducing gender inequality in labour participation in SSA over the considered period.

This thesis proceeds as follows; Section 2. Provides a background on FDI flows, their dynamics as well as how they can be related to female employment. In Section 3., we describe and connect theories and previous researches that have been established around the relation of FDI and female employment participation. Section 4. encompasses our empirical methodology, describes our testable hypothesis, our data and variables, their limitations and finally describes our findings. Lastly, Section 5. provides the general conclusion of our work.

Section 2: Background on FDI and Female Employment in Sub-Saharan Africa

This section aims at providing an understanding of the dynamics of FDI flows and how they can be related to Female employment. We start by defining FDI and Labour participation and then move to a descriptive analysis of the past and current dynamics of foreign investment flows in the world and in Sub Saharan Africa. An explanation on how FDI allocate among sectors is then provided and put into perspective with how female employment is distributed in the FDI receiving sectors in SSA. This background will help us understand the relation between FDI and employment creation that will be covered in the next section.

2.1 Definitions

Foreign Direct Investment: We use the definition set by the IMF/OECD when referring to Foreign Direct Investment (FDI). The definition states that FDI is an international project consisting of an investor residing in a home economy that obtains a long-term “influence” in the administration of an affiliate enterprise in a host economy. A “long-term influence” implies that the transnational company (TNC) owns at least 10 percent of the total voting shares and rights of the local enterprise (OECD, 2008, p. 17). The investor’s aim is thus to obtain an effective say in the management of the business located in the host economy.

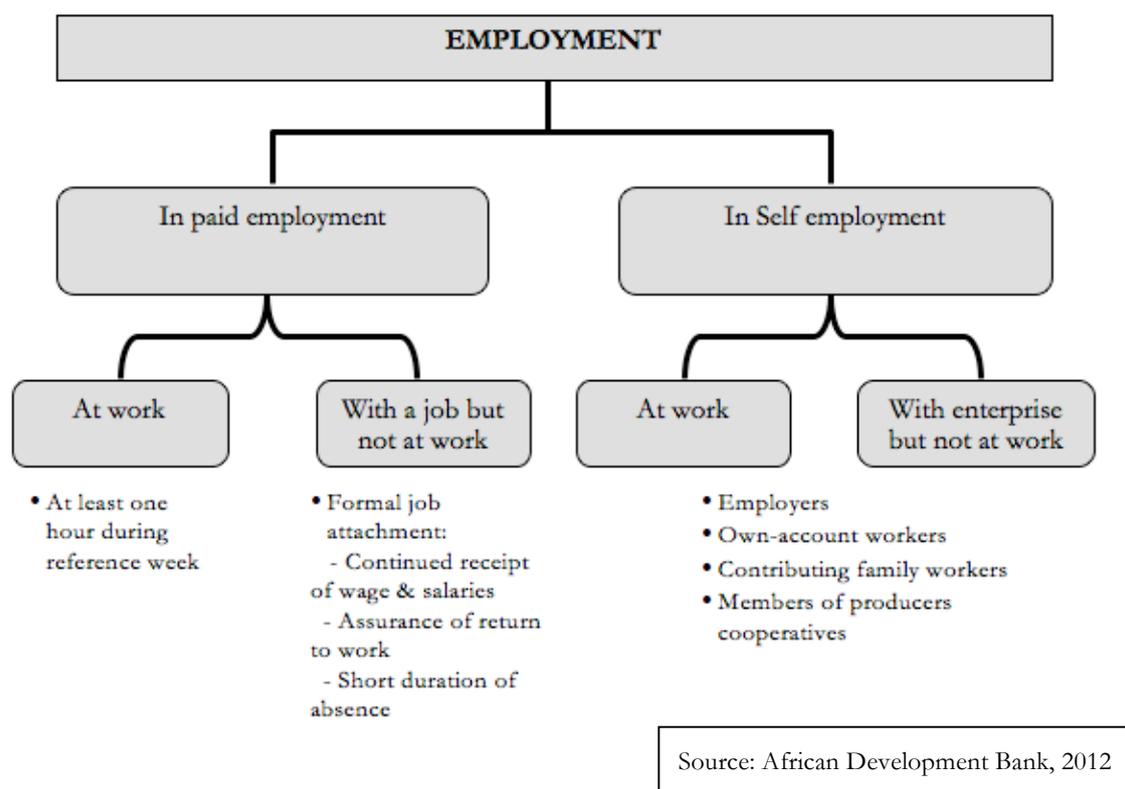
Three types of Foreign direct investments have been distinguished by the UNCTAD (1999); First, “Market-seeking investments” are investments that aim at selling products in the domestic market of the host economy and therefore target economically dynamic countries. The second type of FDI is referred to as “resource-seeking investments”, those FDI pursue natural resources in the host country for their exploitation. Finally, “efficiency-seeking investments” refer to the third type of FDI and aim at minimizing production costs; they target countries with an abundant and cheap labour force.

All types of FDI can be operated in various forms such as Greenfield projects, in which the foreign company creates a new enterprise in the host economy or Mergers and Acquisitions (M&A), the first referring to the fusion of a foreign and a local company and the latter referring to the purchase of a local company by the foreign company, these

both cases are less employment generating as no new entity is formed.

Labour force participation: According to the international definition of employment, labour force participation refers to the employment of people in any economic activity in which the person supplies labour for the production of goods and services. As shown in figure 1, labour force participation thus encompasses the participation in informal and in formal economic activities as well as in self-employment.

Figure 1: International Definition of Employment



2.2 Worldwide distribution of Foreign Direct Investments Flows

Foreign Direct investments have been the principal external private capital flows to least developed countries⁴ (LDCs) between 2001 and 2010. A growing amount of LDCs have seen FDI inflows increasing while Official Development Aid flows were decreasing in the last two decades. FDI inflows are partly embodied by the expanding

⁴ Forty-eight countries have been identified as least developed countries by the United Nations. The complete list of LDCs can be found in the annexes.

presence of large transnational companies (TNCs) such as the Fortune 500 corporations⁵ that doubled their presence in LCDs over the last ten years, especially in Malawi, Mozambique, Bangladesh and Uganda (UNCTAD, 2011). Sub Saharan countries are thus relatively new investment targets for TNCs. Table 1 shows the distribution of FDI flows among developing regions and puts shares of investment going to SSA in perspective with the FDI flows going to the rest of the world.

TABLE 1: Average FDI Inflows to Developing Regions, 1980-2012

	As Percentage of World inflows				As Percentage of Inflows to Developing Countries		
	Total Developing	Sub Saharan Africa	Latin America & Caribbean	Asia	Sub Saharan Africa	Latin America & Caribbean	Asia
1980s	22.20	1.41	7.08	12.59	6.37	31.88	56.7
1990-1994	30.57	1.33	8.03	20.28	4.36	26.26	66.33
1995-1999	29.10	1.15	11.23	16.30	3.96	38.59	56.02
2000-2005	26.88	1.43	9.06	15.89	5.31	33.71	59.11
2005-2009	34.04	1.90	9.45	21.41	5.58	27.76	62.89
2010-2012	47.04	2.56	15.49	28.19	5.43	32.92	59.93

Source: UNCTAD Data

As we can see in table 1, the biggest share of worldwide FDI inflows still goes to developed economies. However, shares going to developing regions have more than doubled over the whole 1980s-2012 periods, passing from about 22% to 47% of total FDI inflows. If we analyze the distribution of FDI inflows within the developing world, we can see that the FDI going to Asia accounts for the biggest portion of the total developing regions' inflows over the whole period. The second biggest receiving developing region is Latin America and the Caribbean (LA & CA), with rates fluctuating around the 30% of total developing world's FDI inflows. Sub Saharan Africa lags behind in terms of FDI inflows compared to the two other developing regions. Indeed, the region was a receiver of less than 10 percent of FDI flows going to developing regions over the whole period. If we compare the FDI flows going to SSA to the world total, we see that the region is a very small FDI receiver relative to other regions. Between 2010 and 2012, SSA only received 2.56 percent of world total FDIs on average, this share was half lower in the 1980s and got as low as 1.15% on average in the late 1990s.

A contributing factor in explaining such low relative levels is that Sub Saharan Africa is the most risky investment environment, as has been established by the

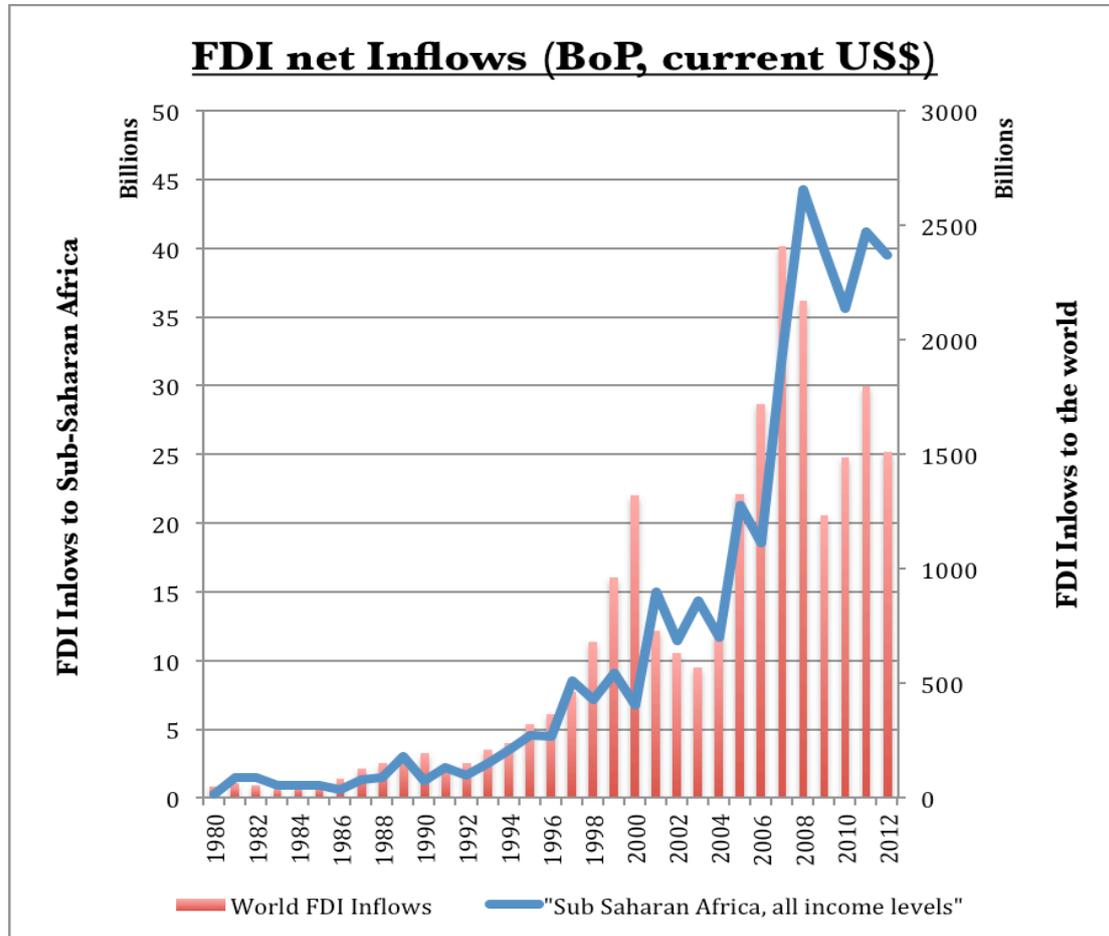
⁵ The Fortune 500 corporations are 500 companies identified annually by Fortune Magazine as being the biggest revenue makers worldwide.

International country Risk Guide (ICRG) Index (PRS group, n.d). Indeed, unstable political structures, wars and expropriations threaten capital and investments. What's more, the inefficiencies and lack of transparency of institutions as well as the burden of corruption tend to amplify transaction costs in FDI processes (Bartels, Kratzsch and Eicher, 2009).

2.3 Foreign Direct Investments in Sub Saharan Africa

When considering Sub Saharan Africa on its own, we notice on figure 2 that the region has been the host of a record amount of FDI, especially during the past fifteen years. Figure 2 shows that FDI inflows going to SSA stagnated at low levels until the 1990s but that this was also the tendency for worldwide FDI. While worldwide FDI flows surged to reach a peak already in the late 1990s, FDI flows entering SSA started their strong expansion only in the 2000s. In SSA, FDI kept following a generally increasing trend to reach a peak in 2008 while worldwide FDI went through peaks in 2000 and 2006 that were both followed by periods of slowdown in FDI flows.

Figure 2: FDI net inflows to Sab Saharan Africa and to the World



Source: World Bank data

Since the 1990s, a number of African countries worked on improving trade and investment liberalization, privatization and the coherence of policies to attract FDI into their economies. Efforts are put into harmonizing FDI policy frameworks in some African regions as well; the Southern African Development Community (SADC) is an example of a free trade zone established between 15 African countries. The privatization of formerly state owned African firms has been another factor of attraction for FDI in the continent, mainly in the form of M&As. Between 1997 and 1999, cross-border M&As represented about 40 per cent of Foreign Direct investment inflows entering Africa (Odenthal, 2001). In terms of employment creation, greenfield projects are more desirable as M&As have a comparatively smaller direct job creation effect. The result of the described policies has been a rise of foreign investments flowing into SSA from US\$ 4.5 billion in the mid-1990s to about US\$ 44.3 in 2008 (World Bank Data).

African governments seek FDI mainly because such investments are commonly associated to economic development. The experience of recently-industrialized economies suggest that a flexible legislation aiming at attracting FDI will help less developed countries develop and converge towards industrial economies in terms of income and economic structure. Nevertheless, contrary to the common thoughts, the growth effect of FDI on host economies has been argued among scholars and no common conclusion was reached on whether FDI are desirable for growth in developing regions.

2.4 Market-seeking, resource seeking and efficient seeking investments and their receiving sectors in SSA

As mentioned earlier, the UNCTAD (2003) distinguished foreign direct investments into three categories according to the factors the investors seek when establishing their enterprise in a host country. “Market-seeking investments” are investments that aim at selling products in the domestic market of the host economy and therefore target economically dynamic countries. The second type of FDI is referred to as “resource-seeking investments”, those FDI pursue natural resources in the host country for their exploiting. Finally, “efficiency-seeking investments” refer to the third type of FDI and aim at minimizing production costs; they target countries with an abundant and cheap labour force. FDI that flow towards developing regions typically belong to the “resource seeking” or to the “efficiency seeking” category of foreign investments. In this section we describe towards which sectors these different

investments flow and how women are represented in the labour force of those sectors.

I. Market-seeking investments

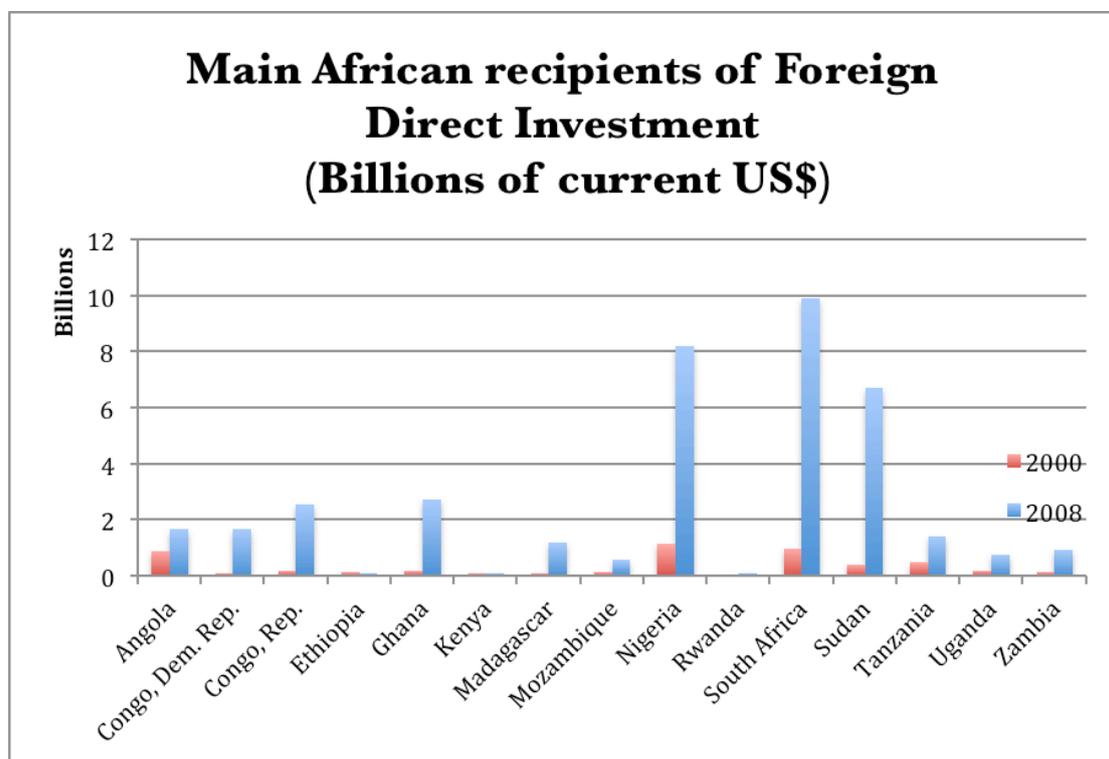
Firstly, investors performing “market-seeking investments” aim at selling their products in the domestic market of the host country. Braunstein (2006) states that such foreign investors intend to seek countries that are economically dynamic; implying countries with elevated and growing GDP per capita, a large internal market, pretty high human capital levels, developed physical and technological infrastructure, an easy access to export markets and stability from a political and social angle. These investments represent the biggest share of FDI as they typically flow to developed countries, which, as stated in section 2.2, are the receivers of the biggest share of FDI on a worldwide scale. In Sub Saharan Africa, market-seeking investments are slight. The structure of the African labour market contributes to Sub Sahara African countries’ failure to attract market-seeking FDI. The high majority of workers in Sub Saharan Africa is indeed unskilled, and lack the levels of expertise required by market seeking FDI. Additionally, the small amount of skilled workers makes production costs increase. This together with a high level of labour protection makes the SSA labour market the least cost-effective one in the world (de Mauro, 2013). Nevertheless, the region’s strong recent growth has endowed households with a rising purchasing power, which attracts investors and might make market-seeking investment become more prominent in the next years (African Economic Outlook, 2013). As gender disparities in education are pronounced in SSA, TNCs performing market-seeking investments are likely to hire men rather than women as the majority of skilled workers remain men.

II. Resource-Seeking Investments and FLFP in the primary sector

Resource Seeking Investments refer to investments that aim at exploiting natural resources in the receiving country; the main factor of interest for such investments is then the resource endowment of the host country as well as physical infrastructure and the availability of labour force. In the last decade the biggest shares of FDI going to developing regions remained concentrated in resource rich countries. This is the case inside Sub Saharan Africa as well. Various researches show that the availability of natural resources is particularly important in Sub Saharan countries’ ability to attract FDI.

Dupasquier and Osakwe (2006) found that the possession of natural resources is positively correlated with FDI inflows. Asiedu (2002) performed panel data analysis for 22 SSA countries over the period between 1984 and 2000 and reported that states owning natural resources or having large markets attract bigger shares of FDI. Figure 3 confirms these findings by showing that the biggest increases in FDI flows in SSA over the last years occurred indeed in mineral, gaz or oil endowed countries, such as South Africa, Nigeria, and Sudan. Ghana, Congo, DRC and Angola received huge FDI flows increases as well (Figure 3).

Figure 3: Main African Recipients of FDI; in 2000 and 2008



Source: World Bank Data

The mineral extraction industries typically hire men rather than women. For African men, working in the mines is not only perceived as a livelihood but is also associated to masculinity. In Katanga, DRC, an increasing amount of men engage in mining activities partly to develop masculine abilities such as corporal strength, bravery and technical knowledge (Cuvelier, 2009). Jobs in the mining sector are thus hardly accessible for women due to the physical capacities they require but also due to the masculine connotation of these jobs.

Kotsadam and Tolonen (2013) state that Women are typically not enrolled in the mining sector directly but provide goods and services around mines in Africa. Growth in

the sector may thus have positive impacts on female employment even though the provision of goods and services arise typically in the informal sector. The World Gold Council (2014) tried to quantify the multiplier effect jobs in the formal gold mining sector have on employment in the wider economy. They showed for example that the formal gold mining industry in Tanzania hires a total of 15 000 people but that an additional 50 000 jobs are indirectly created through the services that need to be provided to the mining sector. In South Africa, they found that for each of the 150 000 jobs offered directly in the mining sector, eight indirect jobs are created on average in indirectly related sectors of the economy. Strong multiplier effects could thus benefit women as they are traditionally engaged in the provision of the services and sales according to the gender segregation that characterizes employment in SSA (Hinton, 2006). Kotsadam and Tolonen (2013) found that the opening of mines generates a structural shift in which women pass from working in agricultural activities to working in the services sector.

Apart from mineral, gaz and oil extraction industries, resource-seeking investments flow into agricultural activities as well in SSA. In fact, the food crisis generates increasing amounts of investments in agricultural land, making the productivity of the sector grow progressively (UNOSAA & NEPAD-OECD, 2010). Investors from developed countries invest increasingly in the acquisition of agricultural land in Africa in order to ensure food security in their domestic economies. Investors from Europe and North America invest in the African agriculture rather for the profit opportunities that higher food prices and the growing biofuel market offers (Hallam, 2009). Tobacco, tea, coffee, cotton, nuts and sugar plantations as well as the fishing industry attract large-scale export oriented investments. Mozambique, Zambia, Tanzania and Uganda have for example seen increasing amounts of FDI flowing into their agricultural sector (Fauzel, 2012). Kolev and Sirven (2010) found that Sub Sahara African women tend to be underrepresented in the industry and services sectors while overrepresented in agriculture. Employment inside the sector is typically segmented by gender, women take commonly charge of the production, processing and selling of the foodstuffs in domestic markets and work on smallholders' land plots while men mostly work in cash crops production destined to exportation (Chen, 2008). Elbeshbishi (2009) state that women have typically access to smaller and to fewer plots with less reliable usufruct rights. Chen (2008) indicated that when agricultural exports increase, less plots are available for

domestic and familial farming, which hampers women's traditional role in organizing agricultural production and also threatens local food security. African governments have indeed often neglected Land rights when they granted huge tracts of land to foreign investors (Rahamoto, 2013). In some countries, women manage to remain in the agricultural sector by finding alternative employment as labourers on their husbands' or relatives' land for cash crops productions destined to exportation or as seasonal workers in the farming of non-traditional agricultural exports (Chen, 2008).

II. Efficiency seeking FDI and FLFP in the secondary and tertiary sectors

The other type of FDI that flow towards developing regions is qualified as "efficiency-seeking". These investments are motivated by the intention of minimizing production costs and are oriented towards the manufacturing and services sectors. They mostly implant in countries possessing few natural resources and small national markets and for which the comparative advantage are low labour costs and lenient working standards (Braunstein, 2006).

Efficiency-seeking foreign investments going to SSA have grown and participated in the global FDI surge experienced by the region. They mainly flow to the manufacture sectors but recently penetrated the services sector in some African countries.

When efficiency-seeking investment flow to the manufacturing sector in Sub Sahara African countries, they typically aim textile and garments industries. Foreign investors' increased interest in the sector has been influenced by the recent improvements and expansions in trade agreements and tax policies between SSA, European and American markets. Examples of these are the African Growth and Opportunity Act with the USA, and the Everything But Arms as well as the Lomé Accord with the European Union (World Bank & MIGA, 2007). The eased access to the western markets attracted new investments; particularly from Asian textile and apparel industries. Besides, agreements such as the Agreement on Textiles and Clothing (ATC) that imposed a quota restriction on textile and garment exports expired (in 2004 for the ATC) which made the world shares of exports of garments and textiles from developing countries rise considerably. Africa attracts efficiency seeking FDI because of low labour costs and abundant unskilled workers. However, supplies unreliability; poor transportation and communication infrastructures as well as high utility costs such as electricity and water refrain more investments from flowing into the manufacture sector.

The textile and garment industry in SSA has been an important pillar for the economic development of various countries such as Lesotho, Kenya, Madagascar, Mauritius and South Africa. Being a labour-intensive industry, the development of the manufacturing sector generates new employment opportunities outside of agriculture, particularly for women. Transnational companies from the textile and garment industries tend to hire women because they represent a cheap, abundant, docile and meticulous labour force (Said Saadi, 2010). Women can directly be employed by the companies or rather be contracted as subcontractors of the transnational entity. The development of manufacturing industries have been supported by efficiency-seeking investments, made by TNCs that are largely criticized for offering very low wages, poor working conditions; and for neglecting workers' health, security and rights such as maternity or sick leaves. Workers are most commonly hired under a casual contract basis, which does not guarantee job security nor viable incomes. All of this makes the jobs created by TNCs in the presumed formal sector similar in many aspects to jobs from the informal sector (Kabeer and Mahmud, 2004). TNCs capacity to move relatively easily to more profitable places lowers the bargaining power of local workers and leaves them in difficult situations when foreign owned factories shut down. Such situations often force them to reorient to the informal economy (de Haan & Vander Stichele, 2007). Despite this appalling realities, when compared to the local alternatives, several authors concluded that the jobs offered by foreign firms generally offer less-poor employment conditions than local firms, making women better off in the end (Kabeer, 2000 and Lim 1990). Arnal and Hijzen (2008) found that TNCs tend to offer better wages than domestic firms, particularly in developing and emerging countries.

The food- and beverage-processing sector is the other most important manufacturing activity that is targeted by efficiency seeking investments in SSA. Big corporations such as Nestlé, Coca-cola and Unilever invest in the region. Agro-processing represents about one fifth of the region's GDP and a bit less than half of SSA's value-added in manufacturing and services (World Bank & MIGA, 2007). When increasing amounts of FDI flow into food processing activities, it has been shown that benefits typically don't reach women. This is due to the fact that, similarly to the gender distribution of employment in the agricultural sector, female workers remain confined to local markets while men enroll in food processing destined for international markets (Carr, Chen & Tate; 2010).

Compared to other developing regions such as South Asia, small amounts of

efficiency-seeking investment flow into the services sector in Sub Sahara Africa. Nevertheless, with the concern of diversifying economic activities and reduce their dependency on commodity prices and unpredictable factors such as weather conditions, some African governments try to make the services sector attractive for foreign investors. A recent trend shows that companies increasingly outsource their activities to SSA, especially in the form of call-centers. Nevertheless, for now, only South Africa and Mauritius are the targets of international investors in this emerging sector. Based on data from the ILO (2011), Kotsadam and Tolonen (2013) conclude that women tend to be overrepresented in sales and services in SSA. Aside from agriculture, a large part of the labour force is devoted to the provision of services in the informal sector such as retail trade and street vending and women predominate these activities (Chen, 2008). Nevertheless, inside the services sector, the activities towards which efficiency-seeking FDI flow, such as the recently established call centers and tourist industries, tend to employ women more than men again with the intention of reducing costs (Benner, Lewis & Omar, 2007).

To summarize all what we described in this section, we can stylize the different types of FDI, their target sector and the labour force they seek as follows:

TABLE 2: Type of FDI, Receiving Sector and related targeted workers

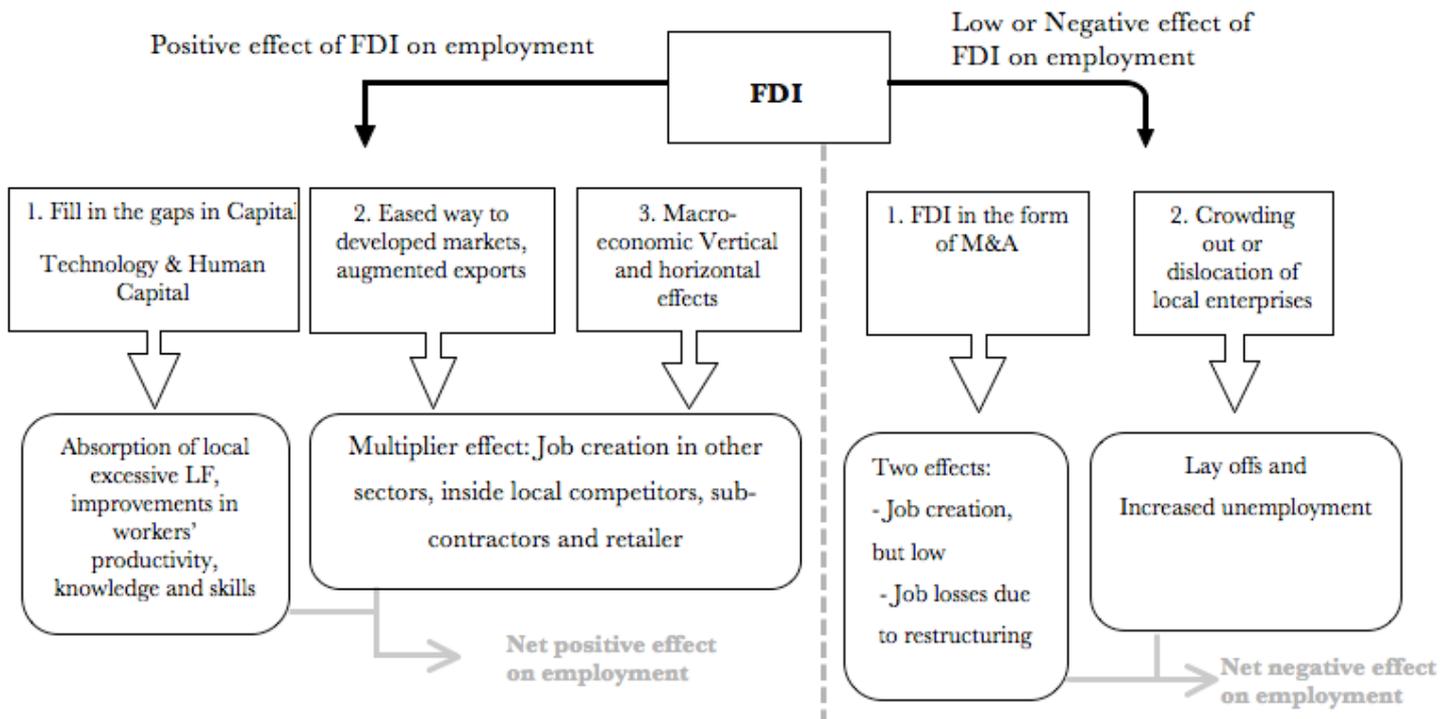
Type of FDI	Receiving Sector	Targeted labour force
Market-Seeking	<i>Tertiary Sector</i>	Skilled
Resource-Seeking	<i>Primary Sector:</i> * Mining, Oil and natural gas * Agriculture	Physical strength Men
Efficiency Seeking	<i>Secondary Sector:</i> * Manufacturing: - Textile and Garment industry - Food and beverage processing <i>Tertiary Sector:</i> * Services: - Tourism -Call centres	Low- skilled Low wages Female

Section 3: The relation between FDI, employment and FLFP: Theoretical framework and Previous work

Few theories have been established around the effect of FDI on female employment participation because only few scholars devoted their study to the gender impacts of FDI. As most of the research on the topic is performed at a small-scale or in the form of case studies, no stylized facts have concretely been set up to compare the impacts of FDI on female employment in different regions. This underlines the contribution our research represents in the field. Indeed, considering almost all SSA countries will allow us to make more general conclusions than what has been made in previous research at much smaller scales. In this section, we will rely on theories that have been established about the general employment effect of FDI and try to relate these with the conclusions yielded from the small-scale researches that addressed the gender-specific employment effects of FDI.

Various theories explaining the impact of FDI on employment have been elaborated and views diverge on the topic. These theories can be distinguished between the pros, which demonstrate the positive effect of FDI on employment and the cons that show opposite effects. The first pro hypothesis developed in this paper states that FDI creates direct employment by bringing the capital, technology and human capital that lack in developing labour abundant countries and consequently prevent their economic development. The second pro hypothesis states that FDI enables developing countries to open up to world markets, which opens the gate to economic growth and direct as well as indirect employment creations. Finally, the third pro hypothesis that we tackle states that FDI creates indirect employment by making consumption rise inside the economy (macro-economic effect), by providing work to local subcontractors of TNCs (Vertical effect) and by forcing local firms to raise competitiveness (horizontal effect). Turning to the contra assumptions, a first hypothesis defends that FDI made through M&As has a low or negative employment creation effect. Lastly, a second contra hypothesis states that FDI hampers local employment by crowding out domestic firms. Figure 4 summarizes these hypotheses in a diagram and all hypotheses are developed thereunder.

Figure 4: Schematic summary of theories on FDI and employment



Pro-Hypothesis 1: FDI and Direct (female) employment creation

The first pro-hypothesis is that Transnational Companies (TNCs), that establish their influence in host countries by means of FDI, are an important way of creating employment in labour surplus economies, which mostly correspond to less developed countries (Argawal, 1996). Concretely, TNCs procure the factors of productions such as capital, technology and business know-how, typically absent in developing countries, which allows for the absorption of the local excessive labour factor. This reduces unemployment and/or underemployment and the economic burden it represents in the developing country.

Research showed that whether FDI creates employment, and in particular, female employment, appears to depend on the type of FDI that has been performed. Massoud (2008) analysed the effects of inward flowing FDI on labour demand in Egypt between 1974 and 2005 and found that FDI had a negative effect on employment when investment flows were entering agriculture and services projects but a positive effect when manufacturing industries were the FDI receivers. Various authors stated that TNC branches from the manufacturing sector usually search for a low-cost, abundant, docile and meticulous workforce, most commonly embodied by women (Siegmann, 2006 and

Saad Saidi, 2010). If the assumption that FDI in manufacturing have a job creating effect holds, women should be the first beneficiaries of these jobs and FLFP in the sector would be positively impacted by FDI (Lim 1990). This also corresponds to the point of view of neo-liberal globalization advocates advancing that FDI favour the “feminization” of employment. However, for this to be true, female employment should rise faster than male employment and a gradually less abundant female labour supply should give them more bargaining power concerning wages for example (Said Saadi, 2010). Siegmann (2006) assesses the validity of the “feminization” of employment hypothesis in the context of growing FDI inflows in Indonesia. The author uses quantitative data from household and firm surveys performed between 1996 and 2000 for various sectors of the Indonesian economy. Siegmann confirmed that in Indonesia, the effect of increased FDI on FLFP vary according to the FDI receiving sector. However, her findings go against the hypothesis of the feminization of employment effect of FDI, exception made for FDI flowing into the estates sector. Indeed, the author found negative FDI effects on relative female employment in the manufacturing sector and in the services sector⁶. Nevertheless, the FDI effects on relative female employment interacted positively with the level of export orientation of the firms as well as with the levels of female human capital. The positive interaction effect with the level of export orientation exemplifies the “cost effect” characteristic of TNCs. The “cost effect” refers to the fact that TNCs that are more oriented towards world markets tend to favour the recruitment of lower paid female workers in order to remain competitive in the global market. The positive interaction effect with the level of human capital can be explained by the fact that foreign firms’ higher technological endowments compared to local firms make them require more qualified workers which are typically men due to the existing gender gap in education (Siegmann, 2006). Indonesia is not the only country in which a reversal of the feminization trends in export-oriented employment has been found. Based on data from the ILO, Braunstein (2006) indicated that the ratio of female employees in manufacturing export oriented TNCs actually diminished in the 1990s in various countries such as Malaysia, Turkey and the republic of Korea. Braunstein (2006) also explains that the “feminization of employment theory” advanced by the neo-liberal globalization advocates is challenged by the fact that household duties and children care are traditionally assigned to women which leaves them with less time available for remunerated work compared to men and keeps them from employment participation.

⁶ For which the author considers the hotel sector.

Several studies looked into the mining sector to analyze the increasing or decreasing effect industrial mining has on female labour force participation. Increasing amounts of FDI flowing into mineral extracting industries have propelled the expansion of the mineral resource sector. Changes in industrial mining and its effects on FLFP are thus extensively driven by changes in FDI inflows (Okubadejo, 2012). Theories on whether industrial mining impacts FLFP positively or negatively remain ambiguous. By means of cross-country regressions covering 169 states for the period between 1960 and 2002 Ross (2008) analyzed the effect of oil extraction on FLFP. He asserted that the exploitation of natural resources tends to impact FLFP negatively through both demand and supply mechanisms. He explained that higher male incomes or raised government transfers, both resulting from the exploitation of mineral resources make household income increase which reduces the incentives for women to join the labour force. The demand for female labour is affected negatively because Dutch Disease effects turn down the profitability of the sectors in which women are highly present such as export-oriented and manufacturing industries. Ross concluded that oil rich countries have lower FLFP rates and claimed this to be valid for mineral mining as well. Yet, Kotsadam and Tolonen (2010) state that these effects might not be extendible to Sub-Saharan Africa. They defend that the manufacturing sector in SSA countries are generally small and diminishing labour demand can thus only slightly impact FLFP. They also affirm that the demand for female workers in manufacture and production is most probably not disposed to diminish even in Dutch Disease scenarios because women remain underrepresented in production and manufacturing while being overrepresented in sales and services in SSA.

Pro-Hypothesis 2: FDI, Exportation and employment effects

A second pro-hypothesis is that TNCs ease the way to developed countries' markets for LDCs' exports; augmented exports create new sources of employment. The employment improvements should not only be considered quantitatively but also qualitatively; several authors defend that FDI inflows make workers' skills and knowledge improve which results in a more productive workforce, an upgrading of economic wellbeing and consequently a higher contribution to public revenues and economic growth (Kingombe, 2002). Senguino (2000) stated that exporting firms need to cut down their costs as much as they can in order to remain competitive in the global

market. High export orientation thus makes demand for female labour augment as female employees receive lower wages than men on average. This refers to the earlier mentioned “cost effect” characteristic of TNCs that had been addressed by Siegmann (2006) for Indonesia. Bussman (2009) also analysed the effects of trade (measured in terms of exports to GDP) and found positive effects on FLFP in non-OECD economies but negative effects in OECD countries for the period 1970-2000. These findings allow us to expect FLFP to be positively affected by FDI in SSA as most of the investment flows entering the region are “efficiency-” or “market-seeking” and thus flow into export oriented activities.

Pro-Hypothesis 3: FDI and Employment creation: macroeconomic, vertical and horizontal effects

FDI creates employment indirectly as well. This works through macro-economic, vertical and horizontal effects (Said Saadi, 2010). The first includes the employment created by the expenses of the employees of the TNCs affiliate. The second refers to the liaison of subcontractors to local suppliers and to local retailers and clients. Finally, the horizontal effects refer to jobs created inside the local competitors of the TNC's enterprise. TNCs that implant in developing countries usually have more advanced technology and more efficient ways of functioning than local firms. According to Mahmood and Chaudhary (2012), this augments competition between domestic firms and forces them to upgrade to better technologies and to rethink their production process in a more efficient way. This process will help them develop and will generate employment demand. Local workers for TNCs that benefit from a technological transfer from the foreign firm may transfer their skills when they are hired by local firms or when they set up their own enterprise after leaving the TNC, both processes would increase productivity and potentially create new employment opportunities (Mahmood and Chaudhary, 2012). Saad Saidi (2010) pointed out that jobs indirectly created by increased FDI inflows represent in many cases new employment opportunities for women. Jobs are created indirectly for women when the foreign enterprises resort to local subcontractors or when increased economic activity makes sectors such as tourism and information technology grow.

Indirect employment created by FDI is hard to quantify due to the increasing tendency of TNCs to resort to subcontractors and informal employees such as

homeworkers. In some countries, this tendency took considerable proportions; for example, in Thailand, about 38 per cent of workers for garment industries were found to be homeworkers (Braunstein, 2006). Subcontracting and homeworking employment by TNCs reduces the channels through which FDI may advantage women. Indeed, it keeps women from entering formal employment and maintains them at the least valued segments of the production chain. Ghosh (2001) studied the decline in female representation in industrial employment in India observed in the 1990s and that happened in a period of increased export growth. Her conclusions suggested that the increased resort of TNCs to subcontracting and home-based employment caused the regression in female formal employment.

Regarding the mining sector, indirect employment is created around mines for traders, farmers and other services professionals enrolled in transportation and banking for example. Iyanda (1984) assessed that for every mineworker in Liberia and Sierra Leone, about 5 dependent jobs were created which meant that the 5245 jobs directly created by the TNCs in the mining sectors generated 26000 additional jobs in other sectors in Liberia and Sierra Leone in 1979.

Contra-Hypothesis 1: M&As and employment creation

Contra hypothesis support that FDI mostly generates no or only little new employment opportunities for locals because, instead of hiring new employees, transnational companies tend to reemploy local workers that were already enrolled in the workforce (CNUCED, 2005). FDI made in the form of M&As can even impact employment negatively when restructuring leads to lay offs of local workers (Kingombe, 2002). Actually, the quantity of created jobs depends on how the TNCs perform their implementation in the host country; the establishment of a new enterprise is desirable while acquiring an existing entity or simply buy shares of a local firm will have a lower impact on employment and can also result in restructurings and job losses (Mucuk and Demirsel, 2013). Whether these lay offs or the low employment creation concern women more than men has not been empirically investigated, this is why we rely on evidences made for employment as a whole, without gender differentiation. This has been empirically confirmed by

Massoud (2008) confirmed this first contra-hypothesis empirically, the author analysed the effects of inward flowing FDI on labour demand in Egypt between 1974

and 2005. Massoud found a negative direct effect of FDI on employment when FDI was implemented in the form of mergers and acquisitions while positive effect of FDI on employment were found when investments were made through Greenfield projects and when they interacted with the local levels of exports and human capital. Hisarcıklilar et al (2009), performed an analysis on the effects of FDI on unemployment in Turkey for the period 2000-2007 and concluded that FDI that flew into the Turkish economy through M&As had had no increasing effect on employment. Odenthal, 2001 found that cross-border M&As represented about 40 per cent of Foreign Direct investment inflows entering Africa between 1997 and 1999 suggests low employment creation according to the above-mentioned mechanisms.

Contra Hypothesis 2: FDI and crowding out of local firms

Another critic that balances the pro hypothesis that FDI increase productivity and female employment in a region is that TNCs may crowd out local firms, forcing their closure and the lay off of their employees (Said Saadi, 2010). Mwilima (2003) specified that in Africa, TNCs may have damaging impacts on local economies because their superior knowledge, worldwide connections, marketing strategies and their access to sustenance services leave few possibilities for local firms to remain competitive. Local competitors may easily be driven out and domestic entrepreneurship may be retained from developing. In the African context, Moss et al (2004) contradict this assertion. The authors used evidence from firm-level surveys gathered from 300 to 400 manufacturing firms in Kenya, Tanzania and Uganda between 2003-2003 and found no evidence of the crowding out of local enterprises by foreign owned firms. On the contrary, the authors showed positive effects of FDI for the receiving economies and for the workers employed in the foreign-owned firms. Foreign firms were indeed found to endow employees with management skills and to invest more in workers' trainings and health than local firms. Whether female workers are particularly more affected than men by the crowding out of local firms by TNCs has not been analyzed in available previous research

Section 4: The impacts of FDI on FLFP in Sub Saharan Africa: Empirical analysis

4.1 Getting into the model: Determinants of FLFP and related variables used in our empirical model

This section describes the main factors that determine female labour force participation and that can vary across countries. We will need to control for these determinants in our model in order to get a more accurate analysis of the individual effect FDI has on FLFP and on gender equity in labour participation. These determinants will thus be related to the time-variant control variables that will be used in our regressions.

I. Household tasks and care work

In the previous section we saw that the presumed “feminization of employment” effect of FDI doesn’t hold in various observed cases and that a contributing explanation is that women have less available time to devote to remunerated employment compared to men. Undeniably, the traditional gender division in the roles taken in society and inside the household represents an obstacle for women from reaching the same economic opportunities than men. Indeed, in most regions of the globe, cultural and social norms traditionally assign women to the care taking of the household and family members. This pattern characterizes Sub Saharan Africa’s division of roles between men and women as well. Women have more responsibilities in taking care of the children and elderly and for the domestic chores (Arbache, Kolev, and Filipiak, 2010). A special feature in SSA is the unpaid time women spend in taking care of individuals infected by the HIV/AIDS epidemic (Kabeer, 2012). The described tasks’ repartition leaves women with less available time to enroll in fix, remunerated jobs and forces them to engage in activities compatible with their household responsibilities. The number of children, elderly, and HIV/AIDS sick as well as the access to infrastructure services such as water and electricity determine the time needed by women in the household and are thus factors that influence their participation in the labour market.

In our fixed effect model, we will use fertility rates as well as the percentage of individuals of ages 15-49 who are infected with HIV as time variant control variables in

order to account for the time devoted by women to household tasks and care work.

II. Education

Education plays an important role in making men and women reach equal outcomes in the labour market. In Africa, educational attainment and skills impact individual labour outcomes positively for both men and women (Arbache, Filipiak, and Kolev, 2010). The impacts of education on labour market participation and incomes were studied by Kuepie, Nordman and Roubaud (2006) on seven big West African urban areas. They concluded that education wasn't an always-infallible guarantee for employment but that it made the propensity to be engaged in jobs in most profitable sectors, the formal private and public sectors, increase. The authors also found a positive impact on individual earnings. Arbache, Filipiak, and Kolev, (2010) studied the African region as a whole and found that a higher level of education doesn't necessary mean lower unemployment but that the quality of employment changes more predictably according to educational achievements; low-paid and underemployment is less prevalent for both genders at higher educational levels. The authors also found a reduction in gender wage inequality for individuals that have higher education. In Sub-Saharan Africa, lower school attainment for women is a matter of concern. Overall in the whole region, out of all men, 61 percent were literate while for women this was only 41 percent. In the 15-64 age group, 38 percent of men against 32 percent of women had followed primary education, for the secondary schooling this becomes 27 percent of men against 20 percent of women and only 5 percent of men, against 3 percent of women attended tertiary education. The gap is exacerbated in rural areas and was highest in Ethiopia, Guinea and Niger and lowest in Madagascar (Arbache, Filipiak, and Kolev, 2010).

Despite all these findings on the importance of education for gender equality in labour participation and other outcomes, our theoretical analysis allows us to suggest that the importance of education for accessing jobs created by TNCs is ambivalent. Indeed, on the one hand, foreign firms' higher technological endowments compared to local firms make them require more qualified workers, which is disadvantageous for women when they have a lower access to education. As we mentioned in the previous section, this was confirmed by Siegmann (2006) who found that the FDI effects on relative female employment interacted positively with the levels of female human capital in

Indonesia. Noorbakhsh, Paloni and Youssef (1999) found that Human Capital is one of the most important determinants of FDI inflows and that its importance increased over time. This also suggests that some foreign investors seek educated workers, which is unfavorable for women as they typically have lower educational attainments than men, particularly in Sub Saharan Africa.

On the other hand, as we saw when addressing the different types of FDI, efficiency-seeking investments pursue low-skilled and cheap employment, especially among women, as in the manufacturing industry for example. Having no or little education might then be an advantage for women to be hired by TNCs even if the quality of the accessible jobs might be dubious.

III. Oil and Mineral extraction

Ross (2008) states that when a country relies largely on oil and mineral extraction in its growth process, it discourages women from joining the labour market and gender inequalities tend to be exacerbated. The author explains this with the classic theories on FLFP that assert that the number of women in the labour force is influenced by two mechanisms; first, the prevailing female wage; when it rises, women have more incentive to substitute leisure for wage labour. Second; the woman's unearned income; the family income that the woman doesn't earn directly, if it rises, incentives to join the labour force are reduced and her reservation wage will be high.

When a country's mineral resources' sector grows extensively compared to others, it risks to develop signs of a "Dutch Disease" such as the rise of the real exchange rate, a decline in the agriculture and manufacturing sectors and an expansion of the construction and services sector. In the case of a gender segregated labour force, as in SSA countries, a Dutch Disease creates a shift away from sectors in which women are typically enrolled to sectors involving heavy labour and that are associated to masculinity such as construction and mining. A boom in the mining sector will push the demand for male labour up and cause their wages to increase, also causing the female reservation wage to increase due to augmented unearned incomes. Labour demand and wages diminish for women as their sectors of work shrink. Consequently, the prevailing female wage will diminish. Incentives for women to leave or to stay out of the labour markets are thus increased and FLFP consequently decreases. Nevertheless, as we stated in our section covering theories and previous studies, theories on whether industrial mining impacts FLFP in a positive or in a negative way remain unsettled and Rosses conclusions

have been contradicted by authors saying that the demand for female workers in sectors such as manufacture and production shouldn't be affected by Dutch disease effects in SSA (Kotsadam and Tolonen, 2010). The negative effect of mineral activities on FLFP defended by Ross is also challenged by the fact that mining activities might not hire women directly but creates indirect employments for them in the provision of goods and services around the mines. This was explained in section 2.4 when describing female employment by sector. In this research, we want to contribute to this ongoing debate that divides scholars' opinions. In order to test whether or not mineral activities hinder women's enrollment in employment and gender equity in labour force participation in SSA, we will create a dummy variable that differentiates mineral rich from mineral poor countries⁷. We will then run our regressions for both groups of countries and analyze whether a significant difference appears in the effect FDI has on FLFP and gender labour participation equality between mineral rich versus mineral poor countries.

IV. Macro demographic and economic conditions

Various macro economic variables have been found to influence FLFP. Scholars don't agree on the impact of GDP per capita growth on FLFP. Some economists advocate that growth has a strictly positive effect on FLFP while more modern research suggests that FLFP follows a U-shaped path while GDP per capita undergoes growth in the country (Ross, 2008, and Luci, 2009). This theory implies that growth decreases FLFP at the first stages of economic development and makes FLFP increase later after. The initial decrease in FLFP can be explained by the fact that when a country onsets its economic growth, fertility rates are typically high, and the sectors with a prevalence of employed women, such as agriculture, shrinks while industrialization and urbanization sectors grow. Industrialization and technological change hire skilled workers, which are typically men due to their privileged access to education. As the men's wages increase, female unearned income usually become high enough for them to afford not to participate in the household income, leading to decreasing FLFP. As growth goes on, the low FLFP leads to tight labour markets while countries need to optimize their "talent pool". Hence, female access to education is improved and employment opportunities increasingly target women, raising their opportunity cost of remaining at home. Fertility rates lower and FLFP increase (Ross, 2008, and Luci, 2009).

⁷ For this we use Pinkovskiy and Sala-i-Martin (2010)'s classification that is added in section 4.2.

In our model, we include the log of GDP per capita as a control variables to take into account the effect GDP growth can have on FLFP and gender equality in employment participation.

Another macro-economic factor that influences FLFP is a country's trade openness level. Indeed, as we stated in the second pro hypothesis of our section 3, the more export oriented a firm is, the more it tends to hire female worker to remain competitive, as women typically represent a cheaper labour force than men (Senguino, 2000). The level of trade openness of a country may thus impact FLFP because countries that are more open to trade will attract more export oriented firms which, according to Senguino (2000), will make FLFP rise. However, we will not add a variable for this because we consider that trade openness will directly define the amounts of FDI flowing into a country and, as the great majority of FDI flowing to SSA aim exporting industries, the level of FDI already includes the export orientation and trade openness of an economy.

We also add the variable Urbanization to our model, referring to the fraction of the population that live in urban areas. Urbanization is assumed to have positive effect on FLFP as women may be more easily connected to job opportunities and education in urban areas (Aboohamidi & Chimdi, 2013). Nevertheless, in the case of Turkey, Tansel (2002) found a reverse relation between FLFP and urbanization. This can be explained by the fact that agriculture represents a main GDP contributor in Turkey. When low educated women leave rural areas, they can only access low wage employment opportunities that don't compensate the elevated costs of childcare (Aboohamidi & Chimdi, 2013), their best alternative is to remain out of the labour market. As many SSA countries' economies have large agricultural sectors, like Turkey, urbanization may create negative impacts on FLFP in those countries; this is why we add urbanization as a time variant control variable in our model.

4.2 Data and variables

This section summarizes the variables that will be used in our model, their sources as well as any manipulation we operate to make them more appropriate for our analysis. Our analysis uses panel data that cover the period between 1990 and 2009. Our time span starts in 1990 because data on FDI flows to African countries is generally unavailable for earlier periods. We choose the year 2009 as the limit of our period due to data availability as well. As we saw when describing FDI inflows to SSA, this time period allows important changes in FDI from stagnation at very low levels in the early 1990s to considerably higher levels in the 2000s. The sample comprises 43 out of 48 SSA countries. Data unavailability forced us to exclude Sao Tome and Principe, Seychelles, Somalia, South Sudan and Eritrea from our sample.

We will use two dependent variables in this analysis. The first dependent variable in our regression is *female labour force participation as a percentage of the female population that is older than 15 years of age*, referred to as “FLFP” in our regressions. This variable is chosen to see if employment opportunities created by FDI make economically inactive women join the labour force or on the contrary, incites them drop out of the labour force as was advanced by Ross (2008) in the case of a Dutch Disease phenomenon. Our second dependent variable is the *Ratio of female to male labour force participation rate*, which will be denoted by “FtoMLFP” in our regressions and help us in answering the sub-question we added to our main research enquiry. We choose this variable to test the hypothesis of the “feminization of employment” effect of FDI. This hypothesis was explained in our theoretical part and advances that FDI should make female employment rise faster than male employment. This dependent variable will thus give us an indication on whether FDI reduces gender differences in labour force participation in SSA countries. Data for both variables come from the World Bank database and are modeled ILO estimates.

Our independent variable is *net inflows of foreign direct investment as a percentage of GDP* and referred to as FDI in our model. Our FDI data come from the World Bank World development indicators.

The choice of our set of time variant control variables has been explained in section 4.1. All data used for these variables, except the one used for education come from the World Development Indicator database of the World Bank. For our education variable, we use female enrolment in primary education as percentage of all enrolments data coming from the UNICEF database. We computed this percentage by dividing female

enrolments in primary education by total enrolments in primary education. To differentiate mineral rich from mineral poor countries, we created a dummy variable according to the classification made by Pinkovskiy and Sala-i-Martin (2010) and that is shown in table 3. The dummy variable takes the value of one if the country is classified as being mineral rich. On the contrary, if the country is mineral poor, the dummy will take the value of zero.

TABLE 3: Classification of Mineral rich and mineral poor countries

<i>Mineral-rich economies</i>		<i>Mineral-poor economies</i>	
Angola	Mauritania	Benin	Malawi
Botswana	Namibia	Burkina Faso	Mali
Cameroon	Niger	Burundi	Mauritius
Central African Republic	Nigeria	Cape Verde	Mozambique
Chad	Republic of Congo	Comoros	Rwanda
Democratic Republic of Congo	Sierra Leone	Cote d'Ivoire	Senegal
Equatorial Guinea	South Africa	Ethiopia	Swaziland
Gabon	Sudan	Ghana	The Gambia
Guinea	Tanzania	Guinea-Bissau	Togo
Lesotho	Uganda	Kenya	Zimbabwe
Liberia	Zambia	Madagascar	

Source: Pinkovskiy and Sala-i-Martin (2010)

As explained in section 4.1, GDP per capita is included in our model to account for macro economic factors that influence FLFP. The variable is taken in its logarithm form in order to ease the interpretation of our results.

For every country and all variables, we collapse our data into five-year averages, this is commonly done in empirical analysis using panel data and helps to resolve problems associated to missing values.

All variables and the name used to refer to them in the regressions as well as the data sources are summarized in table 4.

TABLE 4: Variables used in our models and their name and source

	Variable	Variable Name	Data Source
Dependent variable	Labor force participation rate, female (% of female population ages 15+)	FLFP	World Bank Data World development indicators database (WDI)
	Ratio of female to male labour force participation rate (%)	FtoMLFP	World Bank Data (WDI)
Independent Variable	Foreign direct investment, net inflows (% of GDP)	FDI	World Bank Data (WDI)
Time Variant control variables	Fertility rate, total (births per woman)	Fertility	World Bank Data (WDI)
	Prevalence of HIV, total (% of population ages 15-49)	HIV	World Bank Data (WDI)
	Enrolment in primary education, women, percentage of all enrolments	Education	UNICEF Database
	Logarithm of GDP per capita	LogGDPpc	World bank Data (WDI)
	Urbanization	Urbanization	World bank Data (WDI)
Dummy Variable	Mineral Rich Country	Dummy variable: = 1 if mineral rich { = 0 if mineral poor	Classification made by Pinkovskiy and Sala-i-Martin (2010)

4.3 Testable Hypothesis

In light of our research question and based on the theoretical framework developed in our third section, we test the following hypothesis:

H 1: FDI has an impact on female labour force participation in Sub Saharan Africa

The null hypothesis being that FDI has no effect on female labour force participation.

Our interest is also to see if FDI makes the gender gap in labour participation decrease. For this to happen, FLFP should increase faster than male labour force participation as a consequence of FDI flows. The variable “ratio of female to male labour force participation” will be used as dependent variable in our regressions to account for the gender gap in labour participation. The second hypothesis we are going to test is thus:

H2: FDI impacts gender equality in labour force participation in Sub Saharan African countries.

The null hypothesis being that FDI has no effect on gender equality in labour force participation.

As we saw in the review of previous research in section three, authors’ views on whether mineral resource extraction has a positive or a negative effect on FLFP diverge. In order to contribute to the ongoing debate related to the topic, we test the following hypothesis:

H 3: In SSA, the effect of FDI on female labour force participation and on gender equality in employment participation varies between mineral-rich mineral-poor countries.

Whether the effects FDI have on the gender employment participation gap differ between mineral rich and mineral poor countries has not yet been tackled and is thus added in hypothesis three as well. The null hypothesis of H 3 is that the impact of FDI on FLFP and on gender equality in employment participation does not vary between SSA countries that are mineral rich and those that are not. This hypothesis relies on the

assumption that, all things being equal, countries with rich mineral resources are likely to receive higher amounts of FDI going to their primary sector while countries with small mineral resource endowments are likely to see higher amounts of FDI flowing into their manufacturing and services sectors (Juma, 2012). We differentiate mineral rich from mineral poor countries according to the classification made by Pinkovskiy and Sala-i-Martin (2010) that was provided in section 4.2.

4.4 Empirical Model

To test our first hypothesis, we start with a simple OLS fixed effects regression using the variables described above:

$$FLFP_{i,t} = \beta_0 + \beta_1 FDI_{i,t-1} + \beta_2 \text{LogGDP}pc_{i,t} + \beta_4 \text{Fertility}_{i,t} + \beta_5 \text{HIV}_{i,t} + \beta_6 \text{Educ}_{i,t} + \beta_7 \text{Urbanization}_{i,t} + \eta_i + \varepsilon_{i,t} \quad (1)$$

In which η is the unknown country-specific fixed effect, ε is the error term and the subscripts i and t stand for countries and time periods respectively. The coefficient that interests us most is β_1 because it captures the effect of changing FDI inflows on the outcome variable. If β_1 is significantly bigger than zero we will be able to conclude that FDI influences our outcome variable positively in our sample.

The same regression will then be run using the Ratio of female to male labour force participation rate (FtoMLFP) as outcome variable:

$$FtoMLFP_{i,t} = \beta_0 + \beta_1 FDI_{i,t-1} + \beta_2 \text{LogGDP}pc_{i,t} + \beta_4 \text{Fertility}_{i,t} + \beta_5 \text{HIV}_{i,t} + \beta_6 \text{Educ}_{i,t} + \beta_7 \text{Urbanization}_{i,t} + \eta_i + \varepsilon_{i,t}$$

We choose to use fixed effects (FE) because we work with countries that all have their own cultural, historical and economic characteristics. By using fixed effects, we control for these time-invariant characteristics that are proper to each country and that may influence the predictor and outcome variables. FE remove the effect these country-specific characteristics have on our predictor variables in order to assess the net effect the predictor variables have on our dependent variables. Fixed effects also allow us to reduce the bias that can be generated by the omission of variables. Indeed, the fixed-

effects model controls for all time-invariant dissimilarities between our SSA countries, this means that the estimated coefficients of our model can't be biased by time-invariant characteristics that might have been omitted.

In order to test our second hypothesis that states that FDI has a different effect on female labour outcomes in mineral rich economies compared to mineral poor economies, we are going to run the same regressions but by differentiating countries according to a dummy variable that indicates whether the country is mineral rich or not. We define Mineral rich according to the classification made by Pinkovskiy and Sala-i-Martin (2010) that we mentioned above. The variable takes thus the value of one for mineral rich countries and the value of zero for countries classified as mineral poor.

4.5 Results

The results of our regressions are exposed in tables 4 and 5. Fixed effects are used for all the regressions and the tables show the estimated regression coefficients as well as robust standard errors, the values of R^2 , the number of observations and F-statistics with their associated p-values.

I. When Female labour force participation is the dependent variable

TABLE 5: Summary of regression results for FDI and FLFP.

	(1.1)	(1.2)	(1.3)	(1.4)
Foreign direct investment, net inflows (% of GDP)	0.099 (0.054)*	0.107 (0.054)*	0.125 (0.061)*	0.061 (0.244)
Fertility rate, total (births per woman)		-1.066 (1.083)	0.845 (3.685)	-2.027 (1.258)
Prevalence of HIV, total (% of population ages 15-49)		0.075 (0.099)	0.148 (0.183)	-0.015 (0.092)
Enrolment in primary education, women, percentage of all enrolments		0.344 (0.178)*	0.276 (0.364)	0.576 (0.215)**
Logarithm of GDP per capita		-0.202 (0.553)	-0.092 (0.426)	-0.593 (1.712)
Urbanization		0.003 (0.122)	0.138 (0.316)	-0.19 (0.205)
Observations	172	156	74	82
R-squared	0.0056	0.00	0.0156	0.0171
F-statistic	3.43	3.11	1.55	4.00
p-value, $p(>F)$	0.0712	0.0135	0.2162	0.0086

Note: All regressions are OLS regressions with country fixed effects. * stands for significance at a level of 10% and ** at a level of 5%. Constant term not reported. Standard errors are robust and indicated into parenthesis.

Regression 1.1 in table 4 shows the association between FDI and FLFP when no time variant control variables are included in the regression. This gives us the impact of FDI when all countries are considered as if they didn't have time varying determinants that are specific to each of them and that influence their FLFP rate.

We can see that FDI is positively correlated to FLFP and that its coefficient is statistically significant at a level of 10%, this indicates thus that when FDI increases,

FLFP increase as well. In regression 1.2, our control variables are added. Our first observation is that the effect of FDI on FLFP remains significant and positive. The 0.107 coefficient means that when FDI net inflows increase by 1 percent of GDP, the percentage of women that enroll in the labour force increases by 0.107%. This confirms the pro-hypotheses that we developed in our theoretical model and that advocate the positive effects FDI has on FLFP. According to these pro-hypotheses, the positive impact of FDI on FLFP shown in our results can have various explanations. First, TNCs that implant in host countries may favor the enrollment of female workers as they generally represent a relatively cheaper labour force than men, this mainly concerns efficiency-seeking FDI. Female employment can also be generated by resource-seeking FDI, jobs accessible to women are then mostly created in activities that are indirectly related to the resource extraction. Finally, female jobs can indirectly be created among local competitor industries (horizontal effect) or among sub-contractors of the TNCs (vertical effect). Our results also indicate that the only control variable that significantly influences FLFP overall in our sample is female education. Indeed, increases in the relative enrolment of girls in primary education will have a positive effect on the female labour force participation rate. Educational attainment, even at a primary school level appears thus to have a reducing effect on female unemployment in SSA. Fertility rates are negatively associated to FLFP as theory predicted, however this effect is insignificant. A surprising feature is that the percentage of HIV infected has a positive (but small) effect on FLFP, this goes against our theory that the care taking of HIV infected reduced the ability of women to join the labour force. Nevertheless, the effect is insignificant and doesn't allow us to make any valid conclusions. The effect of GDP per capita on FLFP is insignificant as well. Its negative sign suggests that GDP growth has not a strictly positive effect on FLFP but that FLFP follows a U-shaped path while GDP per capita increases in a country. Urbanization has an extremely low positive effect on FLFP and this relation is insignificant which prevents us to make robust conclusions on this relation.

Regressions 1.3 and 1.4 run the same regression in mineral rich and mineral poor countries respectively. An interesting feature is that the effect of FDI on FLFP is positive in both cases but only significant in mineral rich countries.

As we saw in our theory, women's enrollment in employment might result from jobs created indirectly by the mining activities rather than by direct participation in the mining industries, for which men are typically hired. This goes against the findings of

Ross (2008) that state that an increase in oil and mineral extraction discourages women from joining the labour market. It does confirm the suggestion of Kotsadam and Tolonen (2010) that Dutch disease effects arising as a consequence of the expansion of mining activities should not negatively affect FLFP in SSA. Another interesting feature is that the effect of education on FLFP is positive in both cases but only significant in mineral poor countries. This may suggest that in mineral rich countries, the jobs women join don't require a certain level of education, not even as low as primary schooling. This may correspond to what we explained in our theoretical part, the jobs created around mines for women mostly consist of the provision of goods and services. This usually refers to jobs that don't require high human capital such as street vending for example. Our findings in regressions 1.3 and 1.4 are particularly interesting in terms of policy implications. Indeed, as mentioned earlier, Sub Saharan African governments increasingly implement policies to attract FDI in their economies. Our findings show that these policies will significantly benefit female labour force participation only in mineral rich countries.

From our findings in table 5 we can thus answer our hypotheses 1 and 3:

<i>Tested Hypothesis</i>	<i>Conclusion on the Hypothesis</i>
<i>H 1: FDI has an impact on female labour force participation in Sub Saharan Africa</i>	We confirm this hypothesis and add that overall in SSA countries, increases in net inflows of FDI have a positive effect on FLFP.
<i>H 3: In SSA, the effect of FDI on female labour force participation and on gender equality in employment participation varies between mineral-rich mineral-poor countries.</i>	The effect of FDI on FLFP is positive in both mineral rich and mineral poor countries, however, since the effect is significant only in mineral rich countries, we confirm H3.

II. When Ratio of female to male labour force participation is the dependent variable

TABLE 6: Summary of regression results for FDI and FtoMLFP

	(1.1)	(1.2)	(1.3)	(1.4)
Foreign direct investment, net inflows (% of GDP)	0.122 (0.059)**	0.087 (0.075)	0.116 (0.098)	-0.162 (0.219)
Fertility rate, total (births per woman)		-2.338 (1.568)	2.624 (5.47)	-4.535 (1.355)**
Prevalence of HIV, total (% of population ages 15-49)		0.132 (0.135)	0.357 (0.26)	-0.115 (0.101)
Enrolment in primary education, women, percentage of all enrolments		0.377 (0.248)	0.472 (0.471)	0.675 (1.179)**
Logarithm of GDP per capita		-0.338 (0.915)	-0.276 (0.811)	-0.889 (1.223)
Urbanization		0.127 (0.238)	0.514 (0.658)	-0.217 (0.238)
Observations	172	156	74	82
R-squared	0.0076	0.0018	0.0271	0.0018
F-statistic	2.6	6.93	1.97	3.75
p-value, p(>F)	0.1147	0.00	0.1213	0.0115

Note: All regressions are OLS regressions with country fixed effects. * stands for significance at a level of 10% and ** at a level of 5%. Constant term not reported. Standard errors are robust and indicated into parenthesis.

When the Ratio of female to male labour force participation is used as the dependent variable the effect of FDI inflows is only significant when no control variables are included in the regressions. This, and all other results yielded from our regressions are provided in table 6. Regression 1.1 suggests that when FDI net inflows increase and represent a bigger share of GDP, the gender gap in employment participation is reduced. This would confirm the hypothesis of the “feminization” of employment that states that female employment should rise faster than male employment when FDI flows increase. Nevertheless, when we include the time variant control variables, the effect of FDI becomes insignificant and no conclusion can be made on the potential reduction in gender inequality in terms of the labour force participation. This remains true when we differentiate mineral rich from mineral poor countries. About the effect of FDI on the *Ratio of female to male labour force participation*, we

can point out that, the effect is negative in mineral poor countries, meaning that FDI inflow increases could actually widen the gap between female and male labour force participation in those countries, however this effect is shown to be insignificant. We can now answer our second testable hypothesis:

<i>Tested Hypothesis</i>	<i>Conclusion on the Hypothesis</i>
<i>H2: FDI impacts gender equality in labour force participation in Sub Saharan African countries.</i>	We cannot confirm the hypothesis due to the insignificance of the effect of FDI on gender equality in labour force participation in Sub Saharan African countries.
<i>H 3: In SSA, the effect of FDI on female labour force participation and on gender equality in employment participation varies between mineral-rich mineral-poor countries</i>	When it comes to gender equality in employment participation we cannot confirm H 3 because our results show an insignificant effect of FDI on the ratio of female to male labour force participation in both mineral rich and mineral poor countries.

III. Testing for robustness: exclusion of outliers

A problem that may arise when we use many countries that have different characteristics is that some countries that have very different levels of the outcome variable may account for most of our results. In table 7, we re-run our regression on FLFP excluding Tanzania, Rwanda and Mozambique (regression 1.1). These countries are chosen for their very high levels of FLFP that were above 85% over the whole period. As many women are already in the labour force in these countries, the effect of FDI may be lower than in others because most women able to work are already enrolled in employment. We may thus suspect that by excluding them, FDI could have a bigger effect on FLFP in the rest of our sample. However, regression 1.1 shows that the results change only slightly with the exclusion of those countries. In regression 1.2 we exclude Comoros, Mauritania and Sudan for the opposite reason. Indeed, in these countries FLFP rates were lower than 35% over the whole period, which means that more women are available and potentially able to join the labour force. The results of regression 1.2 are interesting. Indeed, when we exclude Comoros, Mauritania and Sudan of our sample, the effect of FDI on FLFP becomes insignificant. This means that the general results we

found on the effect of FDI on FLFP was driven by the effect FDI has on FLFP in these three countries and that this relation is insignificant overall in the rest of our sample. We also ran our regression on FtoMLFP by excluding Burundi, Mozambique and Rwanda that are countries that have ratios of female to male labour force participation above 1. These countries might drive our results as they have opposite levels of gender inequality in employment participation and may thus react less to the effects of FDI. Nevertheless, our results in 1.3 show that the effect of FDI on FtoMLFP doesn't become significant with the exclusion of these outliers.

TABLE 7: Results of regressions excluding outliers

	(1.1)	(1.2)	(1.3)
Foreign direct investment, net inflows (% of GDP)	0.1025 (0.054)*	0.093 (0.056)	0.089 (0.076)
Fertility rate, total (births per woman)	-1.247 (1.163)	-0.928 (1.108)	-2.099 (1.671)
Prevalence of HIV, total (% of population ages 15-49)	0.062 (0.111)	0.074 (0.099)	0.176 (0.145)
Enrolment in primary education, women, percentage of all enrolments	0.334 (0.189)*	0.317 (0.182)*	0.427 (0.262)
Logarithm of GDP per capita	-0.289 (0.576)	-0.278 (0.559)	-0.229 (0.947)
Urbanization	0.022 (0.13)	0.032 (0.128)	0.154 (0.252)
Observations	144	148	144
R-squared	0.003	0.0013	0.0017
F-statistic	3.2	2.7	6.37
p-value, p(>F)	0.0124	0.0278	0.0001
Note: All regressions are OLS regressions with country fixed effects. * stands for significance at a level of 10% and ** at a level of 5%. Constant term not reported. Standard errors are robust and indicated into parenthesis.			

4.6 Discussion and Data limitation

The results we described in our previous section need to be handled with care due to the data limitations they face. Even though our data is issued by official sources, the accuracy of data related to developing regions such as SSA is not guaranteed. Indeed, given the lack of robust official systems to record demographic, economic and health data such as the ones used in our regressions, the available data for Africa are mostly estimates built from household surveys or shaky national records. Data are generally not computed uniformly across African countries either, which may bias comparisons. An additional weakness is that large population groups may not be considered in the data due to the absence of population censuses in most African countries.

The results of our research are also limited by the availability of data related to SSA. We had to limit our analysis to general labour force participation rates while an important matter in the FDI-FLFP relation is whether FDI makes women join jobs that actually enable them to improve their living conditions as well as the ones of their families. The simple fact of entering the labour force doesn't guarantee living standards improvements in Africa. Indeed, an important share of the FLFP improvements created by FDI is likely to have happened in the informal sector. These jobs are mostly precarious and offer low and irregular incomes. In some SSA regions, informal jobs are so prevalent that low-end informal employment is actually more of a problem than properly said unemployment. Chen (2008) as well as Bigsten & Horton, (1997) reported that women tend to be disproportionately employed in the informal sector, for unpaid and precarious jobs and with lower wages than men. Indeed, when African women join the labour force it is mostly as own account workers in the informal sector, which includes managing family enterprises or working inside the household with no remuneration. Generating reliable data on employment conditions would thus be needed to tackle the working conditions of women in future researches.

Section 5: Conclusions

This paper aimed at assessing how FDI impacted female labour force participation in Sub Saharan Africa in a context of exponentially rising FDI flows. FDI has enthusiastically been sought after by Sub Sahara African governments since the 1990s for the perceived boosting effects it has on economic growth. Nevertheless, little is known on how FDI impacts gender related economic and social outcomes in receiving countries. We decided to tackle the effects FDI has on gender specific employment participation in Sub Saharan Africa because we consider that policy makers should be aware of the gender related consequences FDI attracting policies have. Considering the effects FDI has on gender specific labour force participation is important because gender inequalities in employment have strong repercussions on a country's economy and can impede sustainable and long lasting growth in the long term.

By broaching the effects of FDI on a gender dimension of host economies, we thus investigated a topic that had so far not been much addressed by previous literature. We decided to push our research a bit further by adding a sub-question that tackled whether FDI had a reducing effect on gender labour force participation gaps.

In order to answer our research question, we conducted ordinary least square regressions with fixed effects. This model was chosen to control for all time-invariant dissimilarities that exist between the considered SSA countries and that could influence our results. In all our regressions, the independent variable was FDI as a percentage of GDP and the time varying control variables represented fertility rates, HIV prevalence, education, GDP per capita and urbanization. Those were selected according to theories that identify the determinants of FLFP. Our panel data included 43 Sub Saharan countries that were chosen according to data availability and covers the period 1990-2009. This research contributed to the little literature that exists on the FDI-FLFP relation by focusing on a region that had so far not been studied and by using a larger database than previous researches related to the topic that were performed at smaller scales.

Throughout our empirical analysis we tested three hypotheses in order to answer our research- and sub-questions. Hypothesis one stated that FDI had a significant impact on female labour force participation in Sub Saharan Africa. To test this we used FLFP as dependent variable in our regressions. Our empirical findings allowed us to confirm this

first hypothesis⁸ and additionally showed that overall in SSA countries; increases in net inflows of FDI had a low but positive effect on FLFP. Transnational Corporations (TNCs) that implanted in SSA by means of FDI seemed thus to have generated employment opportunities that benefited women. This coincided with the hypotheses that defend that FDI positively impacts FLFP and that were developed in our theoretical model. Relying on the previous works and theories that we tackled we could explain our results by stating that efficiency-seeking FDI could provoke FLFP increases because TNCs seek a low-cost workforce, most commonly embodied by women, this was stated by Siegmann (2006) and Saad Saidi, (2010). As for Resource-seeking FDI, they could make FLFP increase by creating jobs indirectly rather than directly related to mineral resource extraction (Kotsadam and Tolonen, 2013). The FLFP increase could also be attributable to horizontal and vertical macro economic effects generated by FDI. The first effect referred to the fact that employment is indirectly created inside local enterprises that were forced to increase their productivity to compete with TNCs while vertical effects of FDI referred to the fact that employment is indirectly created among subcontractors of TNCs. The second hypothesis was related to our sub-question and stated that FDI impacted gender equality in labour force participation in Sub Saharan African countries. We used the ratio of female to male labour force participation as our dependent variable to test this hypothesis and found that the influence of FDI in reducing gender gaps in employment participation was positive but insignificant. This contradicted the neo-liberal globalization advocates' theory that stated that FDI caused the "feminization of employment" which implied that Female Labour Force Participation (FLFP) increased faster than male labour force participation as a consequence of FDI inflows and that subsequently; gender employment participation gaps were reduced. Finally, the third hypothesis we tested indicated that the effect of FDI on female labour force participation and on gender equality in employment participation varied between mineral rich and mineral poor countries. The reason for adding this hypothesis was our desire to contribute to the debate that opposes authors' views on whether mineral resource extraction had a positive or a negative effect on FLFP. We found that the effect of FDI on FLFP was positive in both country groups but only significant in mineral rich countries. This could again be explained by the fact that the mining activities create indirect jobs accessible for women. Regarding the reduction in the gender employment participation gap, the effects of FDI were

⁸ The effect of FDI on FLFP was significant at a level of 10%.

insignificant for both mineral rich and mineral poor countries. We finished our empirical analysis by testing the robustness of our results. We did this by rerunning our regressions with the exclusion of outliers. Results changed only when we excluded Sudan, Comoros and Mauritania, countries with low levels of FLFP. The effect of FDI on FLFP then appeared insignificant which suggested that our previous results were driven by the impact FDI had on FLFP in these three outlying countries. Our results allow us to make the following general conclusion: the increasing amount of FDI that flew into SSA over the last decades did not generate significant improvements in FLFP, exception made for countries with low FLFP rates. Significant reductions in gender employment participation gaps weren't observed either. Nevertheless, FDI didn't seem to have negative effects on gender labour force participation either which means that African governments could continue promoting FDI inflows without harming this gender related labour market outcome. We concluded by pointing out that our results should be handled with care to the various data limitations they face.

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Annexes

Annex 1: 48 Least Developed countries as identified by the United Nations

 Afghanistan	 Madagascar	 Djibouti	 Sierra Leone
 Angola	 Malawi	 Equatorial Guinea	 Solomon Islands
 Bangladesh	 Mali	 Eritrea	 Somalia
 Benin	 Mauritania	 Ethiopia	 Sudan
 Bhutan	 Mozambique	 Gambia	 Timor-Leste
 Burkina Faso	 Myanmar	 Guinea	 Togo
 Burundi	 Nepal	 Guinea-Bissau	 Tuvalu
 Cambodia	 Niger	 Haiti	 Uganda
 Central African Republic	 Rwanda	 Kiribati	 United Rep. of Tanzania
 Chad	 Samoa	 Lao People's Democratic Rep.	 Vanuatu
 Comoros	 Sao Tome and Principe	 Lesotho	 Yemen
 Congo (Democratic Republic of the)	 Senegal	 Liberia	 Zambia